

**What Is Claimed Is:**

1           1.    A transflective liquid crystal display device,  
2 comprising:

3           a display panel having a viewing area, wherein the viewing  
4           area comprises a transmissive region and a  
5           reflective region;

6           a backlight device disposed under the display panel,  
7           wherein the backlight device provides a backlight  
8           passing through the transmissive region;

9           a power management controller connected with the  
10          backlight device, wherein the power management  
11          controller controls an intensity of the backlight;  
12          and

13          at least one photodetector located on the display panel  
14          outside the viewing area, wherein the photodetector  
15          detects an intensity of ambient light around the  
16          display panel, and then provides a corresponding  
17          signal to the power management controller to control  
18          the intensity of the backlight;

19          wherein, by the power management controller based on the  
20          corresponding signal, the intensity of the  
21          backlight automatically becomes greater when the  
22          intensity of the ambient light becomes lower, and  
23          the intensity of the backlight automatically  
24          becomes lower when the intensity of the ambient  
25          light becomes greater.

1           2.    The transflective LCD device according to claim 1,  
2 wherein the display panel comprises:

3 a first substrate located above the backlight device;  
4 a pixel electrode having a transparent portion and an  
5 opaque portion formed on the first substrate,  
6 wherein the transparent portion of the pixel  
7 electrode is in the transmissive region and the  
8 opaque portion of the pixel electrode is in the  
9 reflective region;  
10 a second substrate opposite the first substrate; and  
11 a liquid crystal layer interposed between the first and  
12 the second substrates.

1 3. The transflective LCD device according to claim 1,  
2 wherein the backlight device comprises a cold cathode  
3 fluorescent tube (CCFL) or a light emitting diode (LED).

1 4. The transflective LCD device according to claim 1,  
2 wherein the photodetector is a photosensitive resistor or a  
3 photodiode.

1 5. The transflective LCD device according to claim 2,  
2 wherein the first substrate is a glass substrate.

1 6. The transflective LCD device according to claim 2,  
2 wherein the second substrate is a glass substrate.

1 7. The transflective LCD device according to claim 2,  
2 wherein the transparent portion of the pixel electrode is an  
3 ITO (indium tin oxide) layer or an IZO (indium zinc oxide)  
4 layer.

1 8. The transflective LCD device according to claim 2,  
2 wherein the opaque portion of the pixel electrode is an aluminum  
3 layer or a silver layer.

1           9.    A method of fabricating a transflective liquid  
2 crystal display device, comprising the steps of:

3           providing a first substrate having a viewing area and a  
4           peripheral area, wherein the viewing area comprises  
5           a transmissive region and a reflective region;

6           disposing a backlight device under the first substrate,  
7           wherein the backlight device provides a backlight  
8           passing through the transmissive region;

9           providing a power management controller connected with  
10          the backlight device, wherein the power management  
11          controller controls an intensity of the backlight;  
12          and

13          forming at least one photodetector on the first substrate  
14          in the peripheral area, wherein the photodetector  
15          detects an intensity of ambient light above the  
16          first substrate, and then provides a corresponding  
17          signal to the power management controller to control  
18          the intensity of the backlight;

19          wherein, by the power management controller based on the  
20          corresponding signal, the intensity of the  
21          backlight automatically becomes greater when the  
22          intensity of the ambient light becomes lower, and  
23          the intensity of the backlight automatically  
24          becomes lower when the intensity of the ambient  
25          light becomes greater.

1           10.   The method according to claim 9, further comprising  
2 the steps of:

3           forming a pixel electrode having a transparent portion and  
4           an opaque portion on the first substrate, wherein

5 the transparent portion of the pixel electrode is  
6 located in the transmissive region and the opaque  
7 portion of the pixel electrode is located in the  
8 reflective region;

9 providing a second substrate opposite the first  
10 substrate; and

11 filling a space between the first substrate and the second  
12 substrate with liquid crystal molecules to form a  
13 liquid crystal layer.

1 11. The method according to claim 10, further comprising  
2 the steps of:

3 forming a thin film transistor array on the first  
4 substrate, wherein thin film transistors  
5 electrically connect the pixel electrode.

1 12. The method according to claim 10, wherein the  
2 transparent portion of the pixel electrode is an ITO (indium  
3 tin oxide) layer or an IZO (indium zinc oxide) layer.

1 13. The method according to claim 10, wherein the opaque  
2 portion of the pixel electrode is an aluminum layer or a silver  
3 layer.

1 14. A method of fabricating a transflective liquid  
2 crystal display device, comprising the steps of:

3 providing a first substrate having a viewing area and a  
4 peripheral area;

5 forming a metal layer on part of the first substrate in  
6 both the viewing and the peripheral areas, wherein  
7 the metal layer in the viewing area serves as a gate;

8 forming a gate insulating layer on the gate;

9 forming a semiconductor layer on the gate and the metal  
10 layer in the peripheral area;  
11 forming a source electrode and a drain electrode on part  
12 of the semiconductor layer on the gate insulating  
13 layer;  
14 blanketly forming an insulating layer over the first  
15 substrate;  
16 forming a first opening and a second opening penetrating  
17 the insulating layer, wherein the first opening  
18 exposes the drain electrode and the second opening  
19 exposes the semiconductor layer in the peripheral  
20 area;  
21 forming a transparent conductive layer in the second  
22 opening and the first opening, extending to part of  
23 the insulating layer;  
24 forming a reflective layer on part of the insulating  
25 layer;  
26 disposing a backlight device under the first substrate,  
27 wherein the backlight device provides a backlight  
28 passing through the transparent conductive layer  
29 extends to part of the insulating layer; and  
30 providing a power management controller connected with  
31 the backlight device, wherein the power management  
32 controller controls an intensity of the backlight;  
33 wherein a photodetector consists of the metal layer, the  
34 semiconductor layer and the transparent conductive  
35 layer in the peripheral area, and the photodetector  
36 detects an intensity of ambient light above the  
37 first substrate, and then provides a corresponding

38                   signal to the power management controller to control  
39                   the intensity of the backlight;  
40       wherein, by the power management controller based on the  
41                   corresponding signal, the intensity of the  
42                   backlight automatically becomes greater when the  
43                   intensity of the ambient light becomes lower, and  
44                   the intensity of the backlight automatically  
45                   becomes lower when the intensity of the ambient  
46                   light becomes greater.

1       15. The method according to claim 14, further comprising  
2       the steps of:  
3       providing a second substrate opposite the first  
4       substrate; and  
5       filling a space between the first substrate and the second  
6       substrate with liquid crystal molecules to form a  
7       liquid crystal layer.

1       16. The method according to claim 15, wherein the first  
2       substrate and the second substrate are glass substrates.

1       17. The method according to claim 14, wherein the metal  
2       layer is an Al layer.

1       18. The method according to claim 14, wherein the  
2       insulating layer is a SiO<sub>2</sub> layer.

1       19. The method according to claim 14, wherein the  
2       transparent conductive layer is an ITO (indium tin oxide) layer  
3       or an IZO (indium zinc oxide) layer.

1       20. The method according to claim 14, wherein the  
2       reflective layer is an aluminum layer or a silver layer.